

# SUBHAM SHOME

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## RESEARCH INTEREST

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Tomographic Imaging, Deep Learning, Radio Astronomy, Computer Vision, Applied Mathematics, Inverse Problems

## EDUCATION

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**Heriot-Watt University, Edinburgh, UK**

Sep 2024 - Feb 2028 (expected)

*Doctor of Philosophy (PhD) in Radio Astronomy*

Research Area: Physics-based astronomical image reconstruction

**Pazmany Peter Catholic University (PPCU), Budapest, Hungary**

Sep 2022 - Jul 2024

**Autonomous University of Madrid (UAM), Madrid, Spain**

**University of Bordeaux (UB), Bordeaux, France**

*Erasmus Mundus triple Master of Science (MSc) in Image Processing and Computer Vision (IPCV)*

Grade: **4.51/5**

**Amity University Kolkata, India**

Aug 2015 - May 2019

*Bachelor of Technology (BTech) in Electronics and Communication Engineering*

Grade: **9.26/10**

## SKILLS AND EXPERTISE

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**Languages** Python, Matlab, C++, C, SQL

**Libraries** Tensorflow, Keras, OpenCV, Scikit-learn, Pytorch, Scikit-image, Numpy, Pandas, Matplotlib

**Tools** Git, L<sup>A</sup>T<sub>E</sub>X

## PROFESSIONAL EXPERIENCE

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**Master's Thesis Intern**

Jan 2024 - Jul 2024

*IMS (Integration from Material to System) Laboratory*

*Bordeaux, France*

- Working on improvement of automatic parameter tuning for tomographic reconstruction of images using Bayesian stochastics and deterministic constraints.
- Understanding and performing mathematical basis of various integral transforms such as radon transform and projection slice theorem.

**Machine Learning and Deep Learning Intern**

May - Jul 2018, Jan - Mar 2023

*Indian Statistical Institute*

*Kolkata, India*

- Mastered foundational math for Support Vector Machines (SVMs), Random Forests, Logistic Regression. Developed automated system for retinal disease detection, achieving 86% accuracy, continued to bachelor's thesis.
- Applied gained expertise to more than 3 projects, showcasing hands-on experience in deep learning techniques, with a specific emphasis on CNNs.

**Software Developer**

Jun 2019 - Aug 2022

*Tata Consultancy Services Ltd (TCS)*

*Kolkata, India*

- Drove a 20% automation of Walmart's monitoring system, amplifying weekly team efficiency by over 30%.
- Designed and implemented 5% of the UI for Walmart Academy using React JS, and curbed bugs by 15% in 6 months within the ASDA.com production framework.

## RESEARCH PROJECTS

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**Reconstruction of 3D images**

Jan 2024

- Performed multiple experiments on various medical images to perform reconstruction of 3D images using radon transform, depth maps and point clouds, achieving an error rate of 1%.

- Multi-class Classification on Sloan Digital Sky Survey (SDSS) DR14 data

Aug 2023

  - Conducted a comparative analysis on SDSS DR14 dataset, achieving 99.4% and 99.1% accuracy using XGBoost and Random Forest ensemble techniques for multi-classifying galaxies, stars, and quasars.
- ESA Hubble Dataset

Aug 2023

  - Created a 3-class dataset (galaxies, nebulae, solar system) out of publicly available images from Hubble Space Telescope, sourced from the website of European Space Agency (ESA).

## HONOURS AND AWARDS

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- James Watt Scholarship

Apr 2024

Selected from among top-tier candidates as the recipient of the prestigious James Watt Scholarship for PhD research at Heriot-Watt University.
- Sponsorship - Synapse AI Symposium

Jun 2023

Selected among Synapse AI Symposium's top 50 candidates at Milan, alongside global AI luminaries.
- Winner - Cybathlon 2024

Apr 2023

Secured Cybathlon 2023-24's Vision Assistance Challenge victory among 21 global teams at ETH Zurich.
- Erasmus+ Grant

2023-2024

Chosen along with 9 applicants to receive the prestigious Erasmus+ Grant as funding for studies in Europe.
- IPCV Excellence Scholarship

2022-2024

Granted full IPCV fee-waiver scholarship as one of only 3 non-EU citizens selected from more than 1000 applicants.
- Silver Medalist in Academics, BTech

Oct 2019

Earned Silver Medal for B. Tech ECE with 9.26/10 GPA across 4 years.

## CERTIFICATIONS

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- Deep Learning: From perceptrons to diffusion models

Mar 2023

Indian Statistical Institute, Kolkata
- Mathematics for Machine Learning

May 2022

Imperial College of London
- Computer Vision, Graphics and Image Processing

May 2018

Indian Statistical Institute, Kolkata

## LANGUAGES

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- English

IELTS - 8.0 (C1)

Mar 2024
- Bengali

Native Language
- Hindi